

# ERRATA, VOLUME 21

G. H. HARDY, *On the representation of a number as the sum of any number of squares, and in particular of five.*

Miss G. K. Stanley has applied the method of my memoir in vol. 21 of the Transactions to the seven-square problem (see Journal of the London Mathematical Society, vol 2 (1927), pp. 91-96), and has supplied me with the following list of errata. The most important is that on page 266, line 16, where a wrong convention is chosen for the meaning of  $\sqrt{-k}$ : the correction of this involves a considerable number of consequential corrections.

Page 263, (3. 134), read

$${}^{\eta}(T) = \eta \left( 1 - \frac{1}{T} \right) \rightarrow \frac{\pi^4}{96};$$

Page 265, line 21, insert (3. 2251);

Page 266, line 12, read " $z' = \exp \{s(\log |z| + i \operatorname{am} z)\}^n$ ";

line 16, read " $\operatorname{am}(-k) = -\pi$ , so that  $\sqrt{-k} = -i\sqrt{k}$ ";

(3. 233), read

$${}^{\eta}\sqrt{-k} \{(-h + k\tau)i\}^{5/2} = -\sqrt{k} \{(h - k\tau)i\}^{5/2};$$

line 26, read " $h < 0, k > 0$ ";

(3. 241), read

$$\begin{aligned} {}^{\eta}\chi(\tau) &= \frac{\pi^2}{8} + \frac{1}{2} \sum_k' \sum_h \frac{(-1)^h \eta}{\sqrt{k}} \frac{T_{h,k}}{\{(h - k\tau)i\}^{5/2}} \\ &= \frac{\pi^2}{8} + \frac{\pi^2}{8} (-\tau i)^{-5/2} + \frac{1}{2} \sum_k' \frac{(-1)^h \eta}{\sqrt{k}} \frac{T_{h,k}}{\{(h - k\tau)i\}^{5/2}}, \end{aligned}$$

where  $\eta = 1$  if  $k > 0$  and  $\eta = -1$  if  $k < 0$ , and  $h, k$  are . . .";

Page 267, (3. 242), read

$${}^{\eta}\chi\left(-\frac{1}{\tau}\right) = \frac{\pi^2}{8} + \frac{\pi^2}{8} \left(\frac{i}{\tau}\right)^{-5/2} + \frac{1}{2} \sqrt{i} \sum_k' \frac{(-1)^K \eta \epsilon}{\sqrt{K}} \frac{T_{H,K}}{\{(K - H/\tau)i\}^{5/2}},$$

where  $\epsilon = 1$  unless  $H$  and  $K$  are both negative, when  $\epsilon = -1$ , and  $\eta = 1$  if  $H < 0$ ,  $\eta = -1$  if  $H > 0$ , and . . .";

(3. 243), read

$$\left\{ \left( K - \frac{H}{\tau} \right) i \right\}^{5/2} = \zeta \left( -\frac{1}{\tau} \right)^{5/2} \{ (H - K\tau) i \}^{5/2},$$

where  $\zeta = 1$  unless  $H$  and  $K$  are both positive, when  $\zeta = -1$ , and where . . . .”;

line 16, read

$$-\frac{3}{2}\pi < \gamma = \text{am} \{ (H - K\tau) i \} < -\frac{1}{2}\pi;$$

line 17, read “ $\beta + \gamma$  lies between  $-\frac{3}{2}\pi$  and  $\frac{1}{2}\pi$ ”;

line 18, read “ $\alpha = \beta + \gamma$ ”;

line 19, read

$$\left\{ \left( K - \frac{H}{\tau} \right) i \right\}^{5/2} = \left( -\frac{1}{\tau} \right)^{5/2} \{ (H - K\tau) i \}^{5/2};$$

line 20, omit;

(3. 244), read

$$\begin{aligned} \chi \left( -\frac{1}{\tau} \right) &= \frac{\pi^2}{8} + \frac{\pi^2}{8} \left( \frac{i}{\tau} \right)^{-5/2} \\ &\quad + \frac{1}{2} \sqrt{i} \left( -\frac{1}{\tau} \right)^{-5/2} \sum' \frac{(-1)^K}{\sqrt{K}} \frac{\lambda T_{H,K}}{\{ (H - K\tau) i \}^{5/2}}, \end{aligned}$$

where  $\lambda = \epsilon\eta\zeta = 1$  if  $K > 0$ ,  $\lambda = -1$  if  $K < 0$ , and where . . . .”;

Page 268, (3. 245), insert a factor  $\lambda$  in each sum;

(3. 251), read

$$\chi \left( 1 - \frac{1}{T} \right) = \frac{\pi^2}{8} - \frac{1}{2} \sum_H' \sum_K' \frac{(-1)^{H\eta}}{\sqrt{H}} \frac{T_{H-K,H}}{\{ (-K + H/T) i \}^{5/2}},$$

where  $\eta = 1$  if  $H > 0$ ,  $\eta = -1$  if  $H < 0$ , and  $H \dots$ ”;

line 12, read “ $\text{am} \{ (-K + H/T) i \}$ ”;

last formula of footnote, read

$$\sqrt{i} (-1/\tau)^{-5/2} = -(i/\tau)^{-5/2};$$

Page 269, line 3, read “ $h > 0$ ,  $k < 0$ ”;

(3. 255), read

$$\chi \left( 1 - \frac{1}{T} \right) = \frac{\pi^2}{8} - \frac{1}{2} \sqrt{-i} \sum_H' \sum_K' \frac{(-1)^{H\eta}}{\sqrt{K}} \frac{W_{H,K}}{\{ (-K + H/T) i \}^{5/2}};$$

line 6, omit;

line 8, replace  $\epsilon$  by  $\zeta$ , and continue: "where  $\zeta = 1$  unless  $H > 0$ ,  $K < 0$ , when  $\zeta = -1$ , and am  $T \dots$ ";

line 11, read

$$x\left(1 - \frac{1}{T}\right) = -\frac{1}{2} \sqrt{-iT^{3/2}} \sum_H \sum_K \frac{(-1)^{H\lambda}}{\sqrt{K}} \frac{W_{H,K}}{\{(H-KT)i\}^{5/2}},$$

where  $\lambda = 1$  when  $K > 0$  and  $\lambda = -1$  when  $K < 0$ , and the summation is  $\dots$ ;

(3. 256), omit  $\pi^2/8$ ;

line 16, read

$$\sum_{K=1,3,5,\dots} \frac{1}{\sqrt{K}} \sum_{j=1}^K \sum_H \frac{(-1)^{Hj} e^{(j-1/2)H\pi i/K}}{\{(H-KT)i\}^{5/2}};$$

line 20, read

$$\sum_H \frac{(-1)^{Hj} e^{(j-1/2)H\pi i/K}}{\{(H-KT)i\}^{5/2}} = \sum_H \frac{(-1)^{Hj} e^{H\theta_j \pi i}}{\{(H-KT)i\}^{5/2}};$$

Page 270, line 6, for "unity" read " $\pi^2/8$ ";

Page 282, line 14, read "if  $N \equiv 3 \pmod{4}$  or if  $N \equiv 1 \pmod{4}$  and  $\alpha$  is odd, while

$$\chi_2 = 1 - \frac{1}{4} - \frac{1}{4 \cdot 8} - \dots - \frac{1}{4 \cdot 8^{\beta-1}} - \frac{1}{4 \cdot 8^{\beta}} - (-1)^{(1/4)(N-1)} \frac{1}{8^{\beta+1}}$$

if  $N \equiv 1 \pmod{4}$  and  $\alpha$  is even,  $\alpha$  being equal to  $2\beta+1$  when odd and to  $2\beta$  when even";

line 31, add "when  $N \equiv 3$  or  $7 \pmod{8}$ . If  $N \equiv 1$  we must replace  $4 \cdot 8^{\beta-1}$  by  $8^{\beta}$ , and if  $N \equiv 5$  by  $\frac{5}{4} \cdot 8^{\beta}$ ";

Page 283, line 1, read "If  $N \equiv 3$  or  $7$ , we have, by (7. 42)";

line 4, omit the last equality;

line 7, read

$$8^{\beta} \psi\left(\frac{n}{4^{\beta}}\right) = 2\bar{r}(n),$$

and so

$$\bar{r}(n) = \frac{80}{\pi^2} n^{3/2} \sum \left(\frac{n}{m}\right) \frac{1}{m^2}.$$

When  $n \equiv 1$  or  $5$ , it will be found that we obtain the same result."

## ERRATA, VOLUME 28

F. H. MURRAY, *On certain families of orbits with arbitrary masses in the problem of three bodies.*

Page 80, last line, for " $x'_i(0) = X_i^0 = X_i(x_1^0, \dots, x_n^0)$ " read  
 " $(x'_i(0) = X_i^0 = X_i(x_1^0, \dots, x_n^0)).$ "

Page 196, last line, for

$$\frac{m_0 + m_1 - m_2}{a^3} s^2$$

read

$$\frac{m_0 + m_1 + m_2}{a^3} s^2.$$

## ERRATA, VOLUME 29

S. LEFSCHETZ, *Manifolds with a boundary and their transformations.*

Page 442, lines 5, 6 and 8, replace  $\mu$  by  $\mu - 1$ .

Page 449, line 6, replace  $n - \mu$  by  $n - \mu - 1$ .

